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November 6, 2012

**VIA ELECTRONIC MAIL AND U.S. MAIL**

**Re: Comments Concerning the Draft Title V Permit for PSNH Schiller Station, Facility ID No. 3301500012**

Dear Acting Director Wright, Todd Moore, and Michele Roberge:

The Sierra Club submits the following comments regarding New Hampshire Department of Environmental Service's ("NH DES") draft Title V permit for Public Service Company of New Hampshire's ("PSNH") Schiller Station coal-fired power plant at 400 Gosling Road, Portsmouth, New Hampshire.

## **I. SUMMARY OF COMMENTS**

The draft Title V permit proposed for issue by NH DES for Schiller Station suffers from numerous defects that must be corrected before the final permit is issued. In particular, the sulfur dioxide (“SO<sub>2</sub>”) emission limits in the draft Title V permit are dramatically higher than what is necessary to adequately protect human health in either New Hampshire or in neighboring Maine, as is required by federally-approved New Hampshire regulations implementing the Clean Air Act. Significantly more restrictive limits are necessary. Additionally, the draft permit fails to set limits to capture particulate matter (“PM”) measuring 2.5 microns or less (“PM<sub>2.5</sub>”) and condensable PM, fails to require sufficiently frequent stack testing for PM, and improperly excuses certain permit violations.

The Sierra Club accordingly urges NH DES to correct these defects, discussed in more detail below, before issuing a final Title V permit for Schiller Station.

## **II. BACKGROUND**

### **A. Legal Background**

#### **1. The Clean Air Act**

All major stationary sources of air pollution are required to apply for operating permits under Title V of the Clean Air Act (“CAA”). *See* 42 U.S.C. § 7661a(a) (“[I]t shall be unlawful . . . to operate . . . a major source . . . except in compliance with a permit issued by a permitting authority under this subchapter.”). Title V permits must provide for all federal and state regulations in one legally-enforceable document, thereby ensuring that all CAA requirements are applied to the facility and that the facility is in compliance with those requirements. *See* 42 U.S.C. §§ 7661a(a) and 7661c(a); *see also* 40 C.F.R. § 70.6(a)(1). Essentially, these permits must include emission limitations and other conditions necessary to assure continuous compliance with all applicable requirements of the CAA, including the requirements of the applicable SIP. *See id.* Specifically, permits must contain monitoring, recordkeeping, reporting, and other requirements to assure continuous compliance by sources with all existing applicable emission control requirements. *See* 40 C.F.R. § 70. It is unlawful for any person to violate any requirement of a Title V operating permit. *See* 42 U.S.C. § 7661(a).

A Title V permit is issued for a term of no more than five years, 40 C.F.R. § 70.6(a)(2) with a timely and complete application for renewal filed by the source at least six months prior to the date of permit expiration. 40 C.F.R. § 70.5(a)(1)(iii). Once a complete renewal application has been submitted, the existing permit governs the source’s operation until the application is acted upon by the permitting agency. *See* 40 C.F.R. § 70.7(b); *see also* 40 C.F.R. § 70.7(a)(2) (“[T]he program shall provide that the permitting authority take final action on each permit application (including a request for permit modification or renewal) within 18 months . . . after receiving a complete application.”). Permit renewals are subject to the same procedural requirements, including those for public participation and EPA review, which apply to initial permit issuance. *See* 40 C.F.R. § 70.7(c)(1)(i).

## 2. The National Ambient Air Quality Standards

The CAA is intended to protect and enhance the public health and public welfare of the nation. *See* 42 U.S.C. § 7401(b)(1). Pursuant to the Act, the EPA promulgates primary and secondary NAAQS for criteria pollutants, such as sulfur dioxide (“SO<sub>2</sub>”) and nitrogen dioxide (“NO<sub>2</sub>”) and particulate matter (“PM<sub>10</sub>” and “PM<sub>2.5</sub>”). *See* 42 U.S.C. § 7409. Primary NAAQS must be set at a level adequate to protect public health with an adequate margin of safety. 42 U.S.C. § 7409(b). Secondary NAAQS must be set at a level that is protective of the public welfare. 42 U.S.C. § 7409(b)(2). The NAAQS are then implemented through enforceable source-specific emission limitations and other air quality rules established by each state, which are designed to achieve the NAAQS. 42 U.S.C. § 7410(a). Such rules are collected into a State Implementation Plan, or SIP, which is then subject to EPA approval.

A state may also adopt regulations which have not been approved by EPA, or are pending formal EPA approval, and these state-authorized regulations are nonetheless enforceable against polluters in that state. The pollution control measures contained in each state’s SIP are then applied to specific major emissions through the state’s Title V permitting program. These permits must include emission limitations and other conditions necessary to assure continuous compliance with all applicable requirements of the CAA, including the requirements of the applicable SIP.

Further, states are required to not just ensure that NAAQS are attained within their own boundaries—they are also charged with preventing air pollution from blowing into adjoining states and interfering with air quality standards there. Under section 110 of the CAA, states must adopt regulations “prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard”. 42 U.S.C. § 7410(a)(2)(D).

New Hampshire has specific language in its regulations and federally-approved SIP that gives effect to this requirement in section 110:

The division shall apply special emission limits to stationary sources on a case-by-case basis to insure that their air quality impacts on adjacent states shall not interfere with the measures taken in those states to prevent significant deterioration of air quality and shall not prevent the attainment or maintenance of National Ambient Air Quality Standards in those states.

New Hampshire Approved SIP, Env-A 616.01.<sup>1</sup> As such, NH DES is both required and empowered to craft emission limits for air pollutants from stationary sources to prevent air

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<sup>1</sup> *See also* Env-A 615.01. (“The department shall apply special emission limits to a stationary source to ensure that its air quality impacts on adjacent states . . . shall not prevent the attainment or maintenance of the NAAQS in those states.”)

pollution from those sources from negatively impacting attainment of air quality standards in neighboring states.<sup>2</sup>

### 3. Federal Regulation of SO<sub>2</sub>

EPA promulgated initial primary and secondary NAAQS for SO<sub>2</sub><sup>3</sup> in 1971. On June 3, 2010, EPA issued a new SO<sub>2</sub> NAAQS standard, recognizing that the prior 24-hour and annual SO<sub>2</sub> standards did not adequately protect the public against adverse respiratory effects associated with short term (5 minutes to 24 hours) SO<sub>2</sub> exposure. The new 2010 SO<sub>2</sub> NAAQS standard is a 1-hour standard set at 196 micrograms per cubic meter (or 75 ppb). 40 C.F.R. § 50.17(a); Primary National Ambient Air Quality Standard for Sulfur Dioxide Final Rule, 75 Fed. Reg. 35,520, 35,525 (June 22, 2010) (hereinafter “Final Rule”). The new standard was established in the form of the 99<sup>th</sup> percentile of the annual distribution of the daily maximum 1-hour average concentrations. *Id.* at § 50.17(b). Due to both the shorter averaging time and the numerical difference, the new 1-hour SO<sub>2</sub> NAAQS is far more stringent than the prior SO<sub>2</sub> NAAQS. The new NAAQS is projected to have enormous beneficial effects for public health: EPA has estimated that 2,300-5,900 premature deaths and 54,000 asthma attacks a year will be prevented by the new standard. Env’tl. Prot. Agency, *Final Regulatory Impact Analysis (RIA) for the SO<sub>2</sub> National Ambient Air Quality Standards (NAAQS)* (2010), tbl. 5.14, available at <http://www.epa.gov/ttn/ecas/regdata/RIAs/fso2ria100602full.pdf>. Put another way, levels of SO<sub>2</sub> air pollution above the standard in the NAAQS are expected to cause thousands of premature deaths and tens of thousands of asthma attacks every year.

### 4. New Hampshire Regulation of SO<sub>2</sub>

After promulgation of the new 1-hour SO<sub>2</sub> NAAQS, New Hampshire revised its own regulations pertaining to SO<sub>2</sub> ambient air quality standards. *See* Env-A 304.<sup>4</sup> These new regulations were effective as of September 1, 2012, and incorporate the federal standards. *Id.* Under New Hampshire’s regulations, SO<sub>2</sub> ambient levels are not to exceed “75 parts per billion (ppb), 1-hour average concentration.” Env-A 304.01.

### 5. Federal Regulation of Particulate Matter

Particulate matter (“PM”) is treated under the CAA as two distinct air pollutants: PM<sub>10</sub> (PM that is equal to or less than 10 micrometers in diameter) and PM<sub>2.5</sub> (2.5 micrometers in

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<sup>2</sup> Notably, in NH DES’s September 13, 2013 letter to EPA enclosing its SO<sub>2</sub> NAAQS SIP submission, DES points to the section of regulations at Env-A 600, including Env-A 616, as evidence of its ability to properly regulate sources and set emission standards necessary to meet its obligations for implementation of the NAAQS. *See*

<http://des.nh.gov/organization/divisions/air/do/sip/documents/so2-infra-sip-2010.pdf>.

<sup>3</sup> The EPA originally set the primary standard for SO<sub>2</sub> at 0.14 ppm, 24-hour average, and 0.03 ppm, annual average. Sulfur Dioxide (SO<sub>2</sub>) Primary Standards - Table of Historical SO<sub>2</sub> NAAQS, available at [http://www.epa.gov/ttn/naaqs/standards/so2/s\\_so2\\_history.html](http://www.epa.gov/ttn/naaqs/standards/so2/s_so2_history.html).

<sup>4</sup> *See* <http://des.nh.gov/organization/commissioner/legal/rulemaking/documents/env-a300-adptdpstd.pdf>.

diameter and smaller). See National Ambient Air Quality Standards, available at <http://www.epa.gov/air/criteria.html>. Not only do these two pollutants have different physical and behavioral characteristics, see EPA “Clean Air Fine Particle Implementation Rule” 72 Fed. Reg. 20586, 20599 (April 25, 2007) (“PM<sub>2.5</sub> . . . differs from PM<sub>10</sub> in terms of atmospheric dispersion characteristics, chemical composition, and contribution from regional transport”), more importantly, PM<sub>10</sub> and PM<sub>2.5</sub> pose different levels of risk to human health. While PM<sub>10</sub> particles are small enough to be inhaled and accumulate in the respiratory system, PM<sub>2.5</sub> particles, because of their extremely small size, can penetrate deep into the lungs, enter the bloodstream, and cross the blood-brain barrier. See Basic Information on Fine Particle (2.5) Designations, available at <http://www.epa.gov/pmdesignations/basicinfo.htm>. As a result, PM<sub>2.5</sub> pollution is even more dangerous and can cause even more severe and long-term adverse health effects than PM<sub>10</sub>. See, e.g., L.K Fonken et al., *Air pollution impairs cognition, provokes depressive-like behaviors and alters hippocampal cytokine expression and morphology*, Molecular Psychiatry 16, 988 (2011), available at <http://www.nature.com/mp/journal/v16/n10/abs/mp201176a.html>.

Because of the separate needs to control PM<sub>10</sub> and PM<sub>2.5</sub> emissions, EPA strengthened the 24-hour PM<sub>2.5</sub> standard in 2006 to 35 µg/m<sup>3</sup>, while leaving the 24-hour PM<sub>10</sub> standard of 150 µg/m<sup>3</sup> in place. The agency also revoked the annual PM<sub>10</sub> standard, but retained a daily standard of 150 µg/m<sup>3</sup>. EPA also announced in the 2006 final rule that the agency will no longer accept the use of PM<sub>10</sub> emissions information as a surrogate for PM<sub>2.5</sub> emissions information with regard to Title V permits. EPA explained its decision as follows:

Under the Title V regulations, sources have an obligation to include in their Title V permit applications all emissions for which the source is major and all emissions of regulated air pollutants. The definition of regulated air pollutant in 40 C.F.R. 70.2 includes any pollutant for which a NAAQS has been promulgated, which would include both PM<sub>10</sub> and PM<sub>2.5</sub>. To date, some permitted entities have been using PM<sub>10</sub> emissions as a surrogate for PM<sub>2.5</sub> emissions. *Upon promulgation of this rule, EPA will no longer accept the use of PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub>. Thus, sources will be required to include their PM<sub>2.5</sub> emissions in the Title V permit applications, in any corrections or supplements to these applications, and in applications submitted upon modification and renewal. See 40 C.F.R. 70.5(c)(3)(i), 70.5(b), and 70.7(a)(1)(i); 40 C.F.R. 71.5(c)(3)(i), 71.5(b), and 71.7(a)(1)(i).*

72 Fed. Reg. at 20659. (emphasis added). Thus, consistent with the EPA’s treatment of emissions information for particulate matter, a Title V permit must include separate and distinct limitations and standards for PM<sub>2.5</sub> emissions.

## **B. Factual Background**

Schiller Station is a three-boiler electricity generating facility owned and operated by PSNH, a subsidiary of Northeast Utilities. Two of Schiller’s boilers, SR4 and SR6, burn primarily coal, while the third, SR5, was recently converted to combust biomass. Each boiler is rated at 50 megawatts (“MW”), for a combined facility total of 150 MW. The two coal-burning

boilers each have a 574 million Btus per hour rating. Draft Title V Permit at 7. Schiller is located in Portsmouth, New Hampshire, just across the river from the communities of Kittery and Elliot, Maine.

Schiller Station emits large quantities of air pollution. In 2010, Schiller emitted over half a million tons of carbon dioxide, and more than 3,200 tons of SO<sub>2</sub>. Schiller's coal-fired boilers lack any controls for SO<sub>2</sub>.

In light of Schiller Station's high sulfur dioxide emissions, air modeling expert Steven Klafka, on behalf of the Sierra Club, conducted an air dispersion modeling study which employed EPA's AERMOD program to measure Schiller's allowable (based on permitted heat inputs and sulfur dioxide emission factors in pounds per million Btu; these limits are what are carried forward and proposed in the draft Title V permit) and actual (based on maximum hourly emissions obtained from EPA's Clean Air Markets Data and Maps database) emissions to determine whether the Plant was violating national ambient air quality standards. *See* Steven Klafka, "Schiller Station Portsmouth New Hampshire Sierra Club Evaluation of Compliance with 1-hour SO<sub>2</sub> NAAQS," ("Klafka Report, August 29, 2012") attached as Exhibit 1. This modeling report predicts violations of the 1-hour SO<sub>2</sub> national ambient air quality standard ("NAAQS") caused by Schiller Station over a wide area in both New Hampshire and Maine. *Id.* at 3, Fig. 1. Indeed, the modeling predicts impacts significantly higher than the NAAQS. Specifically, the modeling predicts peak impacts from Schiller of 553.0 µg/m<sup>3</sup> and 492.3 µg/m<sup>3</sup> in Maine and New Hampshire, respectively. *Id.* at 3. Further, in order to prevent exceedences of the NAAQS, the modeling report determined that emissions would have to be limited by more than 80%, to 0.41 pounds of SO<sub>2</sub> per million Btus, or 492.1 pounds per hour, on an hourly averaging period. *Id.* at 4.

Subsequently, this modeling was revised to include as base inputs actual hourly emissions from Schiller Station taken from EPA's Clean Air Markets Database; this modeling demonstrated that not only is Schiller permitted to cause severe exceedences of the SO<sub>2</sub> NAAQS, it also has historically caused exceedences of the standard. *See* July 24, 2013 Klafka Report at 4, attached hereto as Exhibit 3.

### **C. Procedural Background**

In 2002, in response to a discrepancy observed by NH DES between the modeled and actual property boundary lines for Schiller Station, modeling was performed for Schiller. *See* Permit Application Review Summary at 2, attached hereto as Exhibit 3. This modeling determined that, at the then-permitted emissions limit of 2.9 pounds per million Btus (lbs/MMBtu) for all three Schiller boilers, Schiller was predicted to cause exceedences of the then-governing SO<sub>2</sub> NAAQS. *Id.* NH DES therefore entered into an agreement with PSNH to set the emission limits for the boilers at 2.4 lbs/MMBtu.

However, intervening Title V permits have continued to incorporate the prior emissions limit. For example, the currently governing Title V permit sets an emissions limit for SO<sub>2</sub> at 2.9 lbs/MMBtu on a 24-hour average for all three Schiller boilers. This Title V permit was issued by NH DES on March 9, 2007, and expired in March of 2012.

In 2012, NH DES requested that PSNH submit an application for a temporary permit to incorporate the agreed-upon 2.4 lbs/MMBtu limits, and PSNH complied with an application dated June 18, 2012. Permit Application Review Summary at 2. NH DES subsequently noticed the draft temporary permit for public comment, with a comments deadline of August 29, 2012. The Sierra Club submitted comments, enclosing the August 29, 2012 Klafka Report and pointing out that aerial dispersion modeling demonstrated that the 2.4 lbs/MMBtu limit NH DES proposed was insufficient to protect against exceedences of the 2010 SO<sub>2</sub> NAAQS in New Hampshire or Maine. Nonetheless, on October 20, 2012, NH DES issued a final temporary permit retaining the 2.4 lbs/MMBtu limit.

On October 2, 2013, NH DES finalized a draft Title V permit to replace the one that expired in the spring of 2012, and opened a public comment period on the draft until November 6, 2013.<sup>5</sup> Accordingly, these comments are timely.

### III. SUBSTANTIVE COMMENTS

#### **A. The Draft Title V Permit Must be Revised to Include SO<sub>2</sub> Emission Limits Sufficient to Ensure Schiller Does Not Cause Exceedences of the NAAQS in New Hampshire**

As currently written, the Schiller Station draft Title V permit does not include SO<sub>2</sub> emission limits sufficient to protect human health or to ensure compliance with either the federal SO<sub>2</sub> standards or New Hampshire's own regulations. Modeling-based SO<sub>2</sub> emission limits must be set such that air quality is protected.

Both the federal NAAQS and New Hampshire regulations set the ambient air quality standard for SO<sub>2</sub> at 75 ppb—or 196 µg/m<sup>3</sup>—on an hourly average. *See* 40 C.F.R. § 50.17(a); Env-A 304.01. Emission limits must therefore be set sufficiently restrictive to ensure that these standards are attained, which means both a sufficiently restrictive numerical emissions limit as well as an appropriate 1-hour averaging period for that limit.

The draft Title V permit, however, proposes to retain the prior emissions limits for Schiller Station of 2.4 lbs of SO<sub>2</sub> per million Btus on a 24-hour averaging period.<sup>6</sup> *See* Draft Title V Permit at 15. However, the modeling performed by the Sierra Club indicates that, to avoid causing exceedences of the SO<sub>2</sub> NAAQS and New Hampshire regulations, the limit must be less than 0.41 lbs/MMBtu. *See* Klafka Report at 4. Thus, the numerical limit in the draft Title V permit should be reduced by roughly 80%.<sup>7</sup>

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<sup>5</sup> *See* <http://des.nh.gov/organization/commissioner/pip/calendar/2013/documents/20131007-schiller.pdf>.

<sup>6</sup> Because each boiler is rated at 574 MMBtu/hour, this translates to a mass limit of 1,378 pounds of SO<sub>2</sub> per boiler per hour, or about 2,755 pounds for both coal-fired boilers together.

<sup>7</sup> The Klafka Report calculates the necessary reduction at 86% by comparison to the 2.9 lbs/MMBtu limits in the Title V permit governing Schiller Station, not the limits proposed here in the draft permit.

Further, the “calendar day average” period in the draft Title V permit is incapable of protecting a 1-hour standard. Draft Title V Permit at 15. As written, the draft Title V permit contemplates Schiller emitting from each of its boilers 2.4 pounds of SO<sub>2</sub> per MMBtu when the emissions from a given 24-hour period are averaged out. This means that in any given hour, emissions could exceed—perhaps greatly exceed—the limit. For example, Schiller could emit at 4.8 lbs/MMBtu for 12 hours, and emit nothing for the remainder of the day, and still comply with the provisions in the draft Title V permit, while nonetheless emitting twice as much SO<sub>2</sub> per hour as its numerical limit, and vastly more than what the Klafka Report calculates as necessary to protect air quality.

This is, in fact, precisely the situation that occurred in 2002 that prompted NH DES to require tightened emission limits for Schiller. Then, as now, modeling demonstrated that the current limits were insufficiently protective of the NAAQS. *See* Temporary Permit Application Review Summary at 2. Then, NH DES took the step of requiring more restrictive emission limits to ensure that air quality was protected. *Id.* NH DES should follow its own precedent and issue proper emission limits to ensure that Schiller is not causing violations of health-based air quality standards.

As such, the SO<sub>2</sub> emission limit in the draft Title V permit must be revised to be at least as low as 0.41 lbs/MMBtu on an hourly averaging period, to ensure that New Hampshire’s air quality is protected as required by both federal and New Hampshire regulations. *See* 40 C.F.R. § 50.17(a); Env-A 304.01.

**B. The Draft Title V Permit Must be Revised to Include SO<sub>2</sub> Emission Limits Sufficient to Prevent Schiller from Interfering with Maintenance of the NAAQS in Neighboring Communities in Maine**

Additionally, the SO<sub>2</sub> emission limits currently contemplated in the draft Title V permit are insufficient to prevent Schiller Station from sending dangerous quantities of SO<sub>2</sub> pollution into neighboring Maine. This is in direct contravention to the requirements placed on NH DES to set limits on a case-by-case basis for stationary sources like Schiller to insure that air pollution does not cross state lines and cause nonattainment of air quality standards.

Under the CAA, New Hampshire is charged with preventing air pollution emitted within its boundaries from blowing into adjoining states and causing violations of air quality standards there. Section 110 of the CAA requires that states adopt regulations “prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will . . . contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard”. 42 U.S.C. § 7410(a)(2)(D).

Under NH DES’s own federally-approved regulations in its SIP, this means that New Hampshire must “**apply special emission limits to stationary sources** on a case-by-case basis **to insure** that their air quality impacts on adjacent states . . . **shall not prevent the attainment**

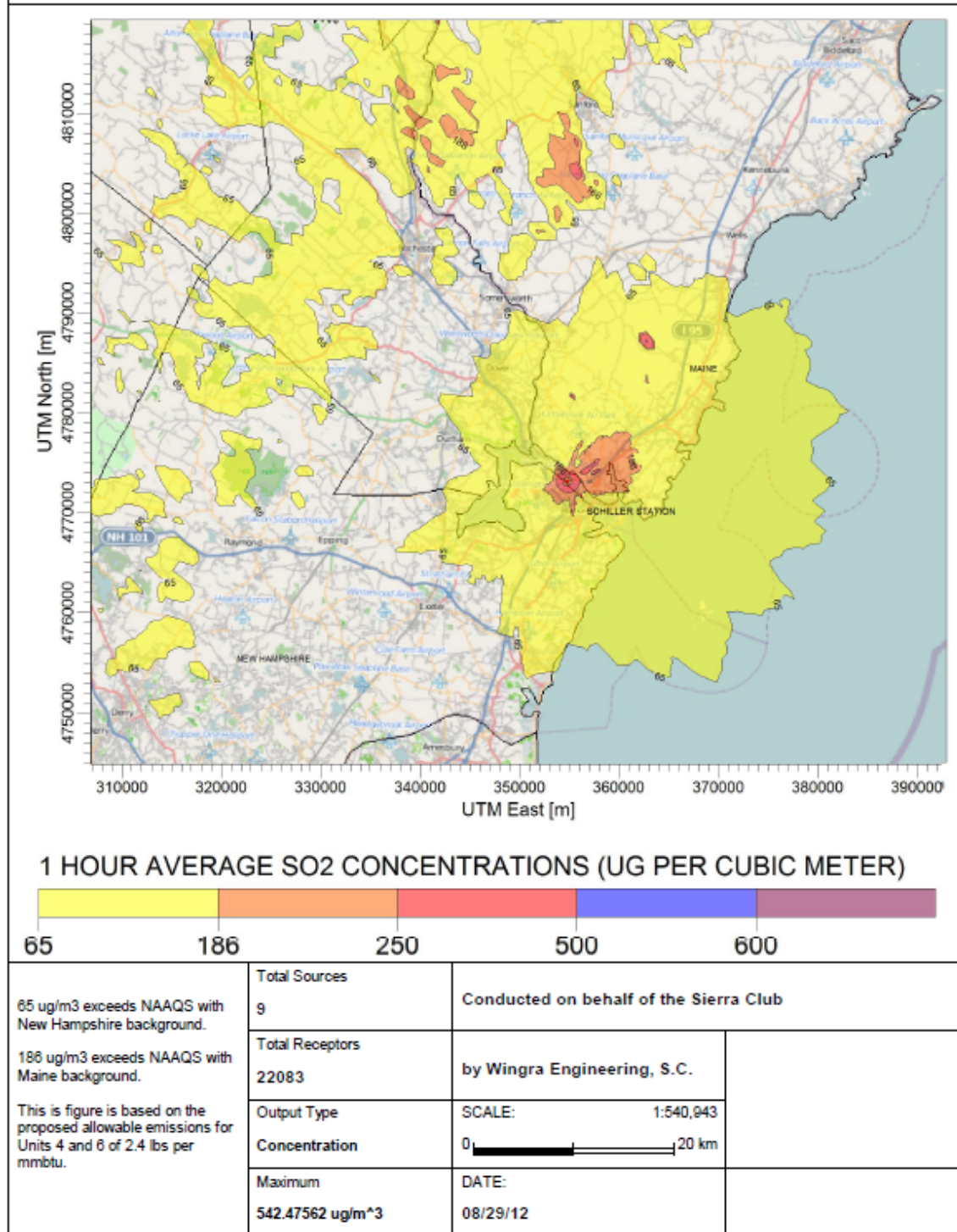
**or maintenance of National Ambient Air Quality Standards in those states.**” New Hampshire SIP Env-A 616.01 (emphasis added).<sup>8</sup>

Here, Schiller Station most certainly does send much of its air pollution, including SO<sub>2</sub> pollution, out of New Hampshire and into Maine communities, as Schiller is located just across the Piscataqua River from Maine. Moreover, air dispersion modeling shows that the pollution from Schiller—even with the emission limits in the proposed Title V permit—spreads over a vast area in both states:

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<sup>8</sup> *See also* Env-A 615.01. (“The department shall apply special emission limits to a stationary source to ensure that its air quality impacts on adjacent states . . . shall not prevent the attainment or maintenance of the NAAQS in those states.”)

**Figure 3 - Regional View**  
**1-hour SO<sub>2</sub> NAAQS Compliance Analysis for Schiller Station, NH**



Klafka Report, August 29, 2012, Fig. 3.

Indeed, the modeling shows that Schiller Station—at the emission levels the draft Title V permit proposes—is predicted to cause peak concentrations of SO<sub>2</sub> in Maine of 553 µg/m<sup>3</sup>, compared to the standard of 196 µg/m<sup>3</sup>. Klafka Report, August 29, 2012 at 3. Notably, the impacts in Maine are *higher* than those in New Hampshire. *Id.*

As such, NH DES is required under its SIP to revise the draft Title V permit to incorporate a tighter SO<sub>2</sub> emission limit of at most 0.41 lbs/MMBtu on an hourly averaging period, to ensure that both air quality in New Hampshire and in Maine are protected. 42 U.S.C. § 7410(a)(2)(D); Env-A 616.01.

Additional modeling provides further confirmation that the limits proposed in the draft Title V permit are insufficient. Sierra Club retained Steven Klafka to model emissions from Schiller Station using as inputs actual, hour-by-hour emissions of SO<sub>2</sub> as reported in the EPA Clean Air Markets Database for every hour from 2006 up through March of 2013. This modeling shows that Schiller Station has historically caused exceedences of the standard in the 2010 SO<sub>2</sub> NAAQS for the 2006-2008, 2007-2009, 2008-2010, and 2009-2011 time periods, and that subsequently—despite Schiller Station operating at historically low levels—Schiller still nonetheless alone was responsible for causing ambient concentrations 98% of the standard. *See* July 24, 2013 Klafka Report at 4.

*Table 1 - SO<sub>2</sub> Modeling Results for Schiller Station Modeling Analysis*

3-Year Time Period	Emissions Type <sup>4, 5, 6</sup>	Average Emissions from Each Unit (lbs/hr)	Maximum Impact All Locations (µg/m <sup>3</sup> )	Maximum Impact In Maine (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )
2006 – 2008	Allowable	1,377.6	745.9	745.9	196.2
	Maximum	1,129.1	611.4	611.4	
	Actual SO <sub>2</sub> & Velocity	508.2	338.0	338.0	
2007 – 2009	Allowable	1,377.6	824.1	824.1	
	Maximum	1,129.1	676.0	676.0	
	Actual SO <sub>2</sub> & Velocity	466.8	332.7	332.7	
2008 – 2010	Allowable	1,377.6	767.7	767.7	
	Maximum	1,129.1	629.4	629.4	
	Actual SO <sub>2</sub> & Velocity	448.1	276.2	276.2	
2009 – 2011	Allowable	1,377.6	794.8	794.8	
	Maximum	1,129.1	651.1	651.1	
	Actual SO <sub>2</sub> & Velocity	323.7	204.2	204.2	
2010 – 2012	Allowable	1,377.6	763.9	763.9	
	Maximum	1,129.1	625.3	625.3	
	Actual SO <sub>2</sub> & Velocity	215.3	168.8	168.8	
4/2010 – 3/2013	Allowable	1,377.6	746.8	746.8	
	Maximum	1,129.1	611.2	611.2	
	Actual SO <sub>2</sub> & Velocity	211.1	192.9	192.9	

Critically, these concentrations are without reference to background concentrations of SO<sub>2</sub>. With even a small ambient background from other sources (vehicle traffic, other fossil fuel-fired facilities, etc.), the combined total would be in excess of the limit. Put another way, the modeling demonstrates that Schiller Station all by itself prevents attainment and interferes with maintenance of the NAAQS in Maine. Clearly, the limits proposed by NH DES in the draft permit fail to insure that air quality is protected in downwind states, as the New Hampshire SIP requires.<sup>9</sup>

In face of this, NH DES appears to rely on 28 days of monitoring data from a single point in Maine from 14 years ago to suggest that Schiller's emissions of SO<sub>2</sub> are not problematic, despite the fact that said monitoring actually recorded concentrations of SO<sub>2</sub> well over the 75 parts per billion standard of the health-based NAAQS. *See* October 4, 2013 Memorandum from Jeff Underhill to Craig Wright, "Review of 1999 SO<sub>2</sub> Monitoring Data for Eliot, ME" (hereinafter "the October Memo").

As a preliminary matter, the 28 days of monitoring data from 1999 is evidence of nothing. Not only is reliance on a single monitor data point problematic, here the monitor was in operation *for less than a full month*. The SO<sub>2</sub> NAAQS is evaluated against at least *three years'* worth of data. *See* Final Rule, 75 Fed. Reg. at 35,520. Moreover, EPA has repeatedly stated that, for SO<sub>2</sub>, monitor data is unlikely to accurately ascertain impacts from large sources like Schiller. *See, e.g., id.* 75 Fed. Reg. at 35,570 (noting that for medium to large sources monitoring is "less appropriate, more expensive, and slower to establish"); U.S. EPA 1994 SO<sub>2</sub> Guideline Document at 2-5 to 2-6, *available at* [http://www.epa.gov/ttn/oarpg/t1/memoranda/so2\\_guide\\_092109.pdf](http://www.epa.gov/ttn/oarpg/t1/memoranda/so2_guide_092109.pdf) ("A small number of ambient SO<sub>2</sub> monitors usually is not representative of the air quality for an area. . . . [D]ispersion modeling will generally be necessary to evaluate comprehensively a source's impacts"); *see also Montana Sulphur & Chemical Co. v. E.P.A.*, 666 F.3d 1174, 1184 (9th Cir. 2012) ("EPA explained that it was 'not practical, given the number and complexity of sulfur dioxide sources, to install a sufficient number of monitors to provide the spatial coverage provided by air quality dispersion models.'"). Indeed, with specific regard to the SO<sub>2</sub> NAAQS, EPA has stated that "even if monitoring does not show a violation," that absence of data is not determinative of attainment status unless it is confirmed by aerial dispersion modeling. Final Rule, 75 Fed. Reg. at 35,551.

Nor was DES's determination of where to place the 1999 monitor informed by a modeling analysis to ascertain where peak ambient concentrations of SO<sub>2</sub> were likely to occur,

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<sup>9</sup> Nor is the potential argument that Schiller does not often emit SO<sub>2</sub> at levels as high as it is permitted particularly compelling. First, the SO<sub>2</sub> NAAQS is a short-term, hourly standard, reflecting the need to protect against the harmful effects of SO<sub>2</sub> exposure that can accrue in as little as five minutes. *See, e.g.,* <http://www.epa.gov/airquality/sulfurdioxide/health.html>. The possibility of Schiller emitting SO<sub>2</sub> at levels that only sometimes cross the threshold is still nonetheless enormously problematic from an air quality and human health perspective. Second, to the extent that Schiller may claim that it does not contribute to exceedences of the NAAQS because of its low-level operation, DES would merely be tightening up some slack in the permit by setting emission limits appropriately protective of human health and the environment.

contrary to EPA guidance. Compare NH DES “An Assessment of Airborne Particulate Matter in Eliot, Maine” (August 2000) (hereinafter, “the August 2000 Report”) at 4 (noting that the monitor location was selected after looking at aerial photographs and because “[e]lectricity was readily available, the location was reasonably secure, and the landowner was willing to allow DES to use the property”—not because careful modeling analysis indicated the site was ideal for monitoring air quality) with EPA Draft Monitoring Technical Assistance Document at 11, available at <http://www.epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf> (“Modeling is a powerful tool that should be strongly considered to inform the identification of potential monitoring sites”).

At end, the few weeks of monitor operation simply do not provide enough data to be of any use in ascertaining impacts on air quality fourteen years later.<sup>10</sup> In fact, NH DES *itself* properly disregarded as unconvincing the August 1999 monitor data in determining—based on subsequent air modeling in 2002—that Schiller’s permitted emissions were too high. See Permit Application Review Summary at 2. The same exact situation exists here.

More importantly, the monitor data actually shows multiple hours of high concentrations, including a daily maximum of 128 parts per billion, or 171% of the standard on August 23, 1999. NH DES appears to dismiss this data by suggesting that the wind was not blowing directly from Schiller to the monitor during the peak readings, and that it was instead blowing from the south. But the monitor in 1999 was placed somewhat to east of Schiller—a southerly wind is by no means inconsistent with that monitor measuring pollution from the plant, particularly where the wind was changing directions throughout the day, as it was on August 23, 1999, when the peak concentration was recorded. See October Memo at A-8 (noting wind coming from 180 degrees from North—or from the south—as well as 3 degrees from North, on the day of peak recorded concentrations).

Similarly, NH DES’s suggestion that perhaps the peak readings reflect emissions from a ship and not the Station are extremely speculative at best—not only does DES admit that “there was not one [ship] on record” in the channel when the high readings were recorded (see October Memo at A-11), but it would take a truly massive ship running its engines at near capacity to emit anywhere near the quantity of SO<sub>2</sub> Schiller was emitting at the time. Clean Air Markets Database data indicates that Schiller was emitting roughly 1200 pounds of SO<sub>2</sub> per hour during the period in which DES’s monitors recorded their highest ambient concentrations; a ship would have to burn 30,000 pounds of 2% sulfur fuel oil per hour to emit that much SO<sub>2</sub>, which is the burn rate consistent with a 10,000 container class vessel (a ship so large it cannot go through the Panama Canal) cruising at 24 knots. The Piscataqua channel in the area discussed is too narrow and too shallow (roughly 35 feet deep) for such a large ship to be present, and for a ship to be

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<sup>10</sup> This is particularly true when the data themselves may not even be accurate to begin with. The August 2000 Report notes that “normal quality assurance for SO<sub>2</sub> monitoring includes strict temperature control of the environment that the monitor is housed in (i.e., heating and/or air conditioning)” but that “a climate-controlled mobile monitoring trailer was not available” and thus “DES was unable to provide” the requisite strict temperature control for its monitor. August 2000 Report at 7.

present during the 6-hour time period DES discusses, it would have to be barely moving at all, and therefore unlikely to be emitting significantly.<sup>11</sup>

As such, the 14-year-old 28 days' worth of monitoring data from a single monitor in Maine provide no assurance that Schiller will not interfere with attainment of the 2010 SO<sub>2</sub> NAAQS in Maine; reliance on such tenuous data as an assurance that air quality is protected would be arbitrary and capricious. To the contrary, rigorous modeling analyses show that the limits proposed in the draft Title V permit are grossly insufficient to protect air quality and that therefore these limits violate NH DES's obligations in New Hampshire's own SIP to protect downwind air quality. For these reasons, the draft Title V permit must be revised to have more restrictive, hourly emission limits for SO<sub>2</sub>.

### **C. The Draft Title V Permit Contains Deficiencies Concerning Particulate Matter Limits and Monitoring, and Operation during Emergencies**

#### **1. The Draft Title V Permit Fails to Include Limits for PM<sub>2.5</sub>**

As previously discussed, particulate matter or PM is treated as two separate pollutants under the CAA: PM<sub>10</sub> and PM<sub>2.5</sub>. See National Ambient Air Quality Standards, *available at* <http://www.epa.gov/air/criteria.html>. EPA has stated that because PM<sub>2.5</sub> now has a separate and distinct NAAQS, PM<sub>10</sub> can no longer be treated as a surrogate for PM<sub>2.5</sub>. Therefore, consistent with the EPA's treatment of emissions information for these pollutants, the final Title V permit for Schiller Station must include separate and distinct limitations and standards for PM<sub>2.5</sub> emissions. Further, permitting must address condensable PM. Condensable PM is a common component of both PM<sub>10</sub> and PM<sub>2.5</sub> and, therefore, the primary PM<sub>10</sub> and PM<sub>2.5</sub> NAAQS include consideration of both the filterable and condensable fractions of PM. See EPA Basic Information on Particulate Matter, *available at* <http://www.epa.gov/airquality/particlepollution/> (stating that, with regard to the NAAQS, "[p]articulate matter,' also known as particle pollution or PM, is a complex mixture of extremely small particles *and liquid droplets*."') (emphasis added).

The PM<sub>2.5</sub> NAAQS is an applicable requirement with which the final Title V permit's emissions limitations and standards must assure compliance. Yet, as currently drafted, the proposed permit fails to provide an emissions limit specific to PM that is equal to or less than 2.5 micrometers in diameter ("PM<sub>2.5</sub>"). Instead, the permit merely sets limits for "total suspended particulate" emissions while specifically qualifying those limits to refer to "the filterable portion only." Draft Title V Permit at 15.<sup>12</sup> This language does not distinguish between PM<sub>10</sub> and PM<sub>2.5</sub>, nor does it state which type of PM must be held to this limit, and it fails to set any limit at all for condensable PM. Yet this is the only PM limit in place for Schiller's coal-fired units. Clearly, the draft permit must be revised to distinguish between the two types of PM and

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<sup>11</sup> Indeed, NH DES speculates on the presence of ships based on records of *tugboats* guiding ships in the channel. If a ship is being guided by a tugboat, it is unlikely to be running its engines—and therefore emitting much SO<sub>2</sub>—to any significant degree.

<sup>12</sup> In fact, the draft Title V permit does not even require *monitoring* for PM<sub>2.5</sub>. See Draft Title V Permit at 49 (requiring stack testing for "TSP and PM<sub>10</sub>," but not for PM<sub>2.5</sub>).

properly incorporate the applicable standards under the NAAQS, and to include limits for condensable PM.

## **2. The Draft Title V Permit Contemplates Impermissibly Infrequent Stack Testing for PM**

As currently written, the draft Title V permit for Schiller Station would only require stack testing for PM emissions once every five years. This is impermissibly infrequent, and must be revised.

Federal regulations make clear that monitoring and reporting requirements must match the time period over which an emission limitation is measured. *See* 40 C.F.R. § 70.6(a)(3)(i)(B); 40 C.F.R. § 70.6(c)(1). The D.C. Circuit Court of Appeals has explicitly stated that “a monitoring requirement insufficient ‘to assure compliance’ with emission limits has no place in a [Title V] permit unless and until it is supplemented by more rigorous standards.” *See Sierra Club v. EPA*, 536 F.3d 673, 677 (D.C. Cir. 2008). As further explained by the Court, annual testing is unlikely to assure compliance with a daily emission limit. *Id.* at 675. Here, it is all the more obvious that stack testing once every five years will not assure compliance with short-term emission limit. *See* Draft Title V Permit at 49 (stack testing for PM is to be conducted “[e]very five years”).<sup>13</sup> The frequency of monitoring must instead correlate in some manner to the averaging time used to determine compliance. In particular, monitoring must assure *continuous* compliance where emission limits have instantaneous parameters.

As it stands now, the draft permit’s infrequent and intermittent compliance testing requirements—one test per permit cycle—will neither assure nor demonstrate compliance with the permit’s PM limitations. The permit should be revised to require continuous emissions monitoring or much more frequent stack testing.

Nor is use of opacity monitoring as a surrogate for PM monitoring an adequate solution. Opacity monitoring falls short of assuring compliance with applicable PM standards in that it fails to capture secondary particulate matter emissions, i.e., the particulate matter that condenses from vapor *after* leaving the exhaust stack. Due to the exclusion of condensable PM emissions, mere monitoring of opacity does not provide assurance that overall PM emissions for Schiller Station are within the limits prescribed.<sup>14</sup> Mere opacity monitoring as contemplated in the draft permit, while salutary and an essential part of ensuring overall source compliance with the CAA, is inadequate for ensuring compliance with applicable standards, for while the presence of opacity violations is indicative of PM violations, the *absence* of opacity violations does not mean that no harmful levels of PM are being emitted, because of condensable and transparent PM.

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<sup>13</sup> Even ignoring the 0.10 lb/MMBtu PM standard, the 251.85 tons per year limit establishes a periodicity and therefore averaging period for which the draft permit’s proposed monitoring regime is *five times* longer. *See* Draft Title V Permit at 15.

<sup>14</sup> As noted above, the NAAQS for PM<sub>10</sub> and PM<sub>2.5</sub> take into consideration both filterable and condensable particulate matter. *See* <http://www.epa.gov/airquality/particlepollution/> (stating that, with regard to the NAAQS, “[p]articulate matter,’ also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets.”) (emphasis added).

The Schiller Title V permit must be revised accordingly, with continuous emissions monitoring for PM, or at the very least annual or more frequent stack testing for PM, and testing that includes monitoring of emissions of PM<sub>2.5</sub>.

### **3. NH DES May Not Excuse Schiller from Compliance with Clean Air Act Requirements**

The draft Title V permit offers Schiller’s operator a shield “from enforcement action brought for noncompliance” with the permit’s emission limits where that noncompliance is the “result of an emergency.” Draft Title V Permit at 91. However, there is no provision in the Clean Air Act that excuses permit violations on the grounds that those violations were “sudden and reasonably unforeseeable,” as the Draft Permit appears to contemplate. *Id.* Instead, the Clean Air Act requires compliance at all times (as makes sense—the core values the Clean Air Act seeks to protect of human health and the environment are indifferent as to whether pollution is released intentionally or accidentally, *see* 42 U.S.C. § 7401(b)(1)). As with startup, shutdown, or other malfunction events, the simple presence of an “emergency” does not excuse an emitter from the strictures of its permit; nor can NH DES grant such a shield against enforcement. Accordingly, the “Emergency Conditions” clause of the draft Title V permit should be removed before the permit is finalized.

## IV. CONCLUSION

For the foregoing reasons, the draft Title V permit for Schiller Station is deficient, and should be amended as described above before any final Title V permit issues.

Respectfully submitted,

/s/  
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